



Mobile On-site Fueling Station Performance Evaluation Service

Peter Ehlers, Sr Operations Manager

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Who is CSA Group?

CSA – A Global Leader in Hydrogen Technology Standards, Testing, Inspection and Certification Services

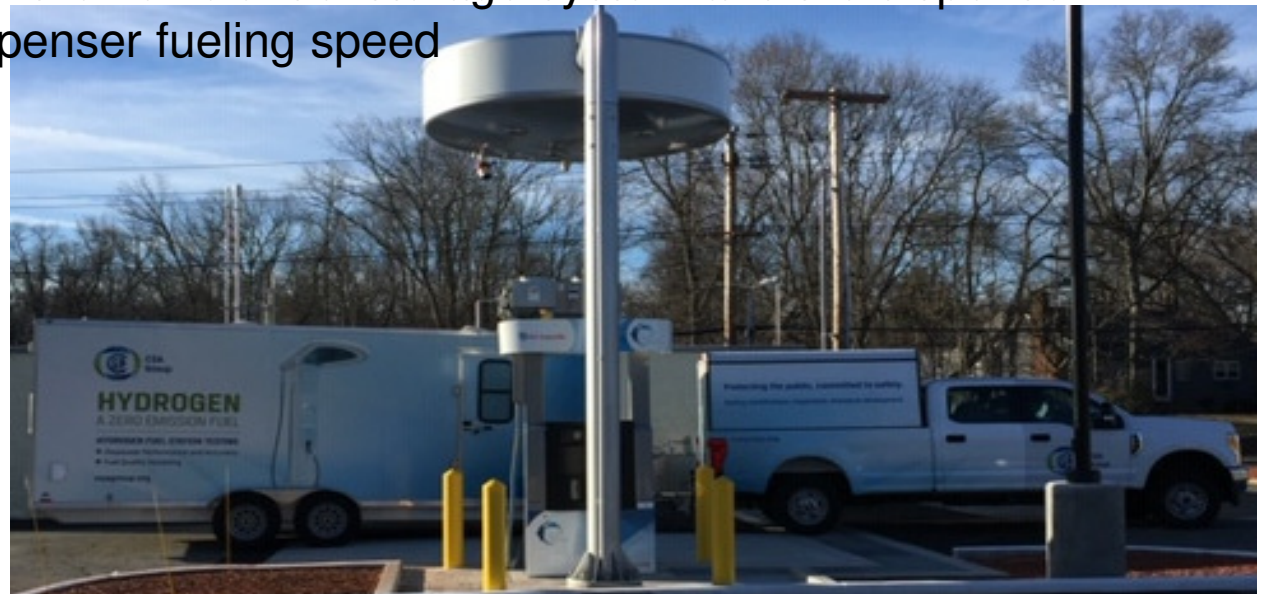
- CSA Standards Team published the first suite of Hydrogen Station and Vehicle component and system standards for North America
- CSA Group has locations in Cleveland, Ohio and Langley, BC providing product certification and testing services to station and vehicle OEMs
- CSA Group's Certification and Attestation Marks are recognized worldwide



On-Site TESTING and ATTESTATION SERVICES

SCOPE

- Mobile test platform for verification of the performance of compressed hydrogen fuel dispensers to SAE J2601 and NIST approved procedures
- On-site ATTESTATION services for Fueling Protocols using ANSI CSA HGV4.3 approved dispenser test procedures
- Benefit: Provides assurance that the delivery of fuel will not compromise the safety and integrity of the vehicle fuel storage system and the dispenser meets targets for dispenser fueling speed
 - Over Temperature
 - Over Pressure
 - Over Density



On-site Service Options

Hydrogen
Dispenser
Testing
(HDTA)

Weights and
Measures
Device
(WAMD)

On-site Service Options

Hydrogen
Dispenser
Testing
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Weights and
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HDTA

SCOPE

- Trailer based mobile test platform for verification of the performance of compressed hydrogen fuel dispensers to SAE J2601
 - On-site ATTESTATION services for Fueling Protocols using ANSI CSA HGV4.3 approved dispenser test procedures
 - Benefit: Provides assurance that the delivery of fuel will not compromise the safety and integrity of the vehicle fuel storage system and the dispenser meets targets for dispenser fueling speed
 - Over temperature
 - Over Pressure
 - Over Density
 - Multiple Vehicle
- Scenarios



HDTA

What's inside the HDTA?



HDTA

Panel

Analog readout for Operator Safety
H70 approved Fueling Connector



HDTA

Simple Connection to dispenser to begin the Testing and Assessment Service

Panel

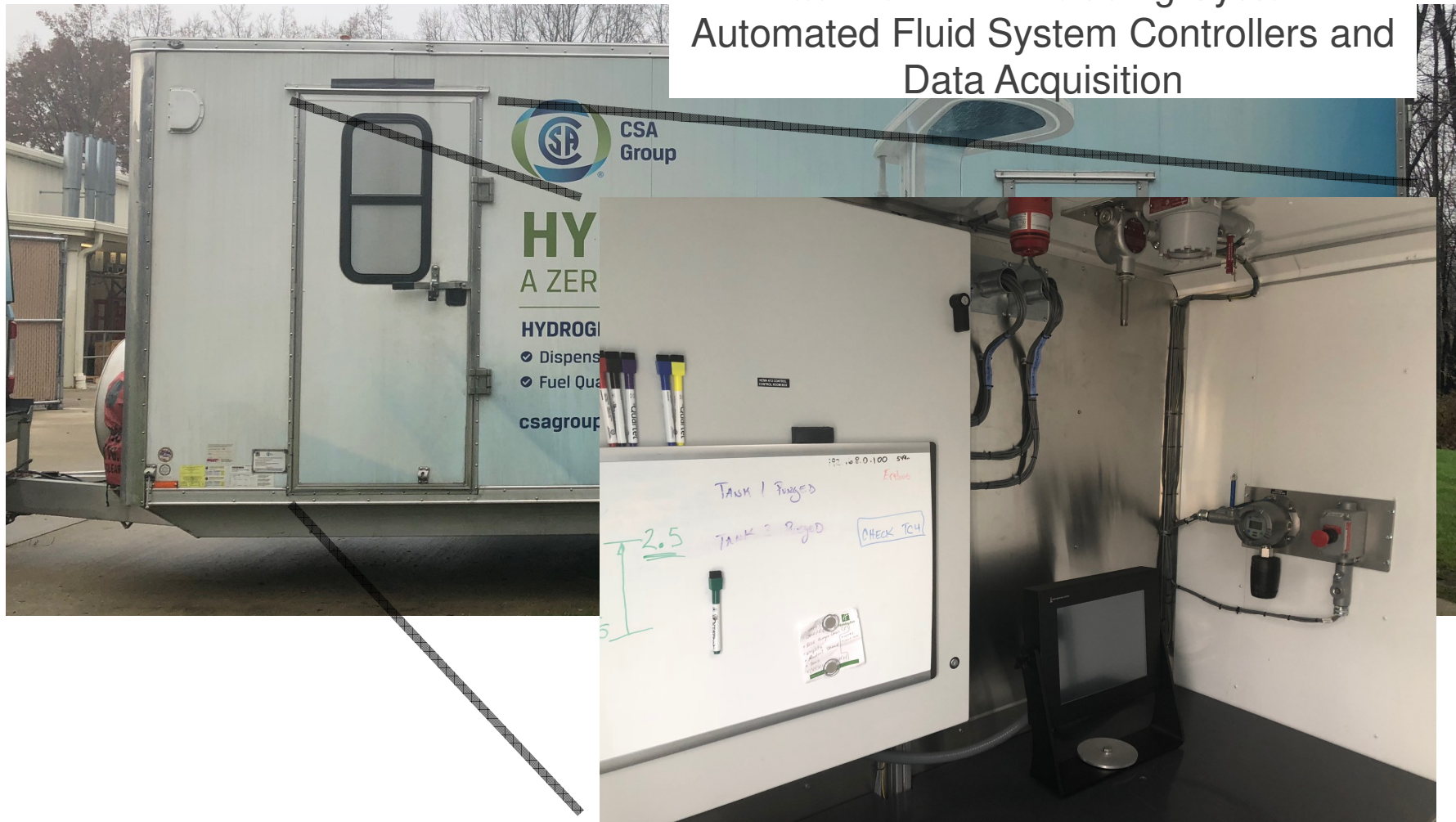


HDTA

Control Room

Meets CI D2 classified requirements(all components Hazloc rated)

Lab View HMI including System Automated Fluid System Controllers and Data Acquisition



HDTA

Main Cargo Area



HDTA



HP Actuated Control
Valves, Fittings, Sensors
And Lines
All Sensors Calibrated
Under CSA ISO 17025



HDTA



H70 “Worst Case” Tanks:

Large: 7-10 kg (256 litres)

Med: 4-7 kg (154 litres)

Small: 2-4 kg (88 litres)



HDTA

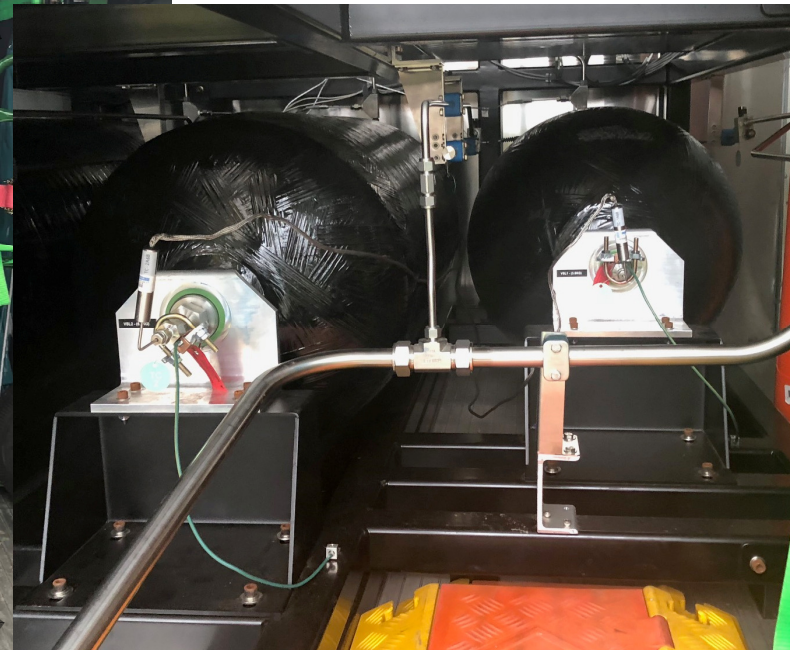


H70 "Worst Case" Tanks:

Large: 7-10 kg (256 litres)

Med: 4-7 kg (154 litres)

Small: 2-4 kg (88 litres)



HDTA

OUTPUT

- On-site ATTESTATION services for Fueling Protocols using ANSI CSA HGV4.3 approved dispenser test procedures
- CSA Group is a NRTL and our mark is recognized worldwide



CSA Group Attestation label on stations in the Northeast:

- Hartford, Connecticut
- Mansfield, Massachusetts
- Hempstead, New York



CONFIDENTIAL

HDTA

OUTPUT

- Certificate of Attestation is supplied to the station owner
- Full detailed performance report for all of the different fueling conditions is also supplied for reference to the station owner to support annual performance retesting and repair retesting
- Typical Attestation Testing Service requires 5 days on site
- Can test to any fill protocols not just SAE J2601
- Control system and tanks can support multiple vehicle filling (back-to-back) scenarios



Certificate of Attestation

Certificate: 70104027 Customer Reference Number: A500850000

Project: 70104027 Date Issued: February 12, 2018

Issued to: World Hydrogen Distribution
123 Somewhere Drive
Cleveland, Ohio 44131
USA
Attention: Mickey Mouse Label s/n: A0001

The products listed below are eligible to bear the CSA Mark shown.

A0001



ANSI/CSA HGV 4.3-2016

Issued by:
Ken Loeventhal
Project Manager, Alternative
Fuels/Components Testing

Reviewed By:
Greg Chirton
Technical Advisor,
Fuel Cells & Gas Vehicles

PRODUCTS

CLASS – 9706-06

APPLICABLE REQUIREMENTS

ANSI/CSA HGV 4.3-2016 *Test methods for hydrogen fueling parameter evaluation*

MARKINGS

The product shall be marked with the following:

- submitter's identification (name or trademark);
- model or type designation, or other unique identification;
- additional markings as may be required by the applicable standard(s);
- CSA Attestation Mark with the adjacent indicators "Attestation" and ANSI/CSA HGV 4.3- (edition year) below the "Attestation" indicator.

DQD 107.10 Rev 2017-07-04

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SCOPE

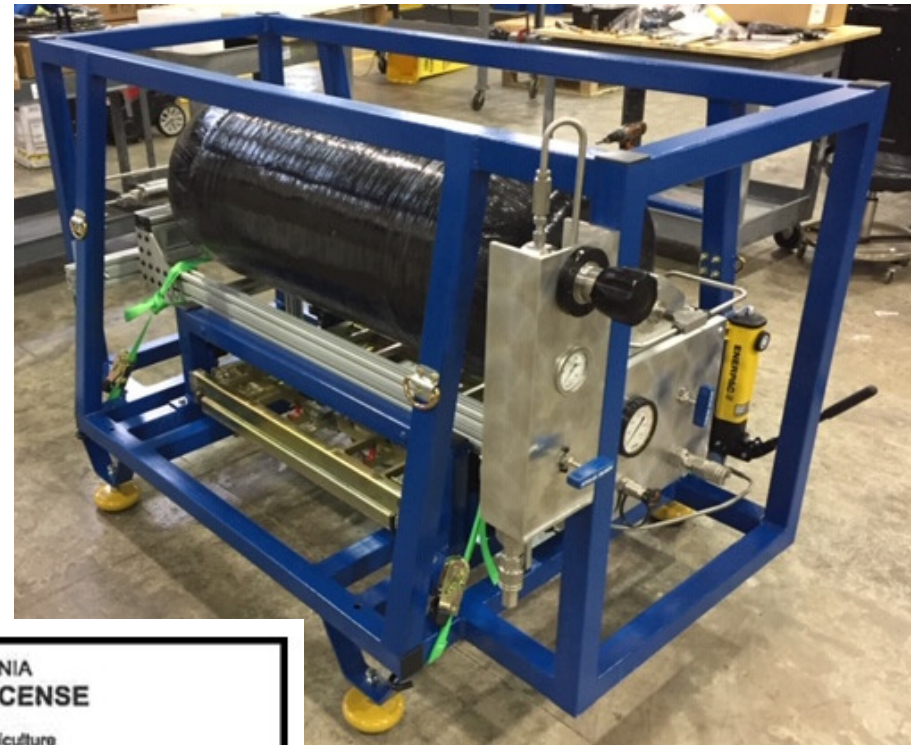
- Truck based mobile test platform for verification of fuel delivery accuracy for commercial sale
- On-site service offering Qualification of Dispenser Accuracy using National Institute of Standards and Technology (NIST) HB44 approved procedures
- Benefit: Provides assurance that the actual delivery of the measured fuel reflects value indicated at point sale
- Enables the retail sale of Hydrogen



WAMD

SCOPE

- H70: 4-7 kg (154 litres) fill capacity
- Gravimetric method
- All sensors calibrated and qualified to CSA Group's ISO 17025 accredited procedures
- CSA Tech already licensed in CA
- CSA willing to register to become a "Service Agency" in California.



Contacts:

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